

## REMARKS

The specification has been updated to include the cross-reference to the parent application, now issued.

The undersigned attorney appreciates the clarification given by Examiner Stafira on May 18, 2005 over a telephone conference. In the conference, Mr. Stafira clarified that, in his view, the term "the information" processed using the first threshold and the term "the information" processed using the second threshold in claim 25 are deemed to be not necessarily the same. For this reason, the teaching in U.S. Patent 5,808,735 of processing data from different layers using different thresholds (i.e. data obtained from each layer or at each Z level processed with its own corresponding threshold) is deemed to anticipate claim 25. Claim 25 has now been amended to clarify that "the information" processed using the first threshold and "the information" processed using the second threshold are substantially the same. This then clearly distinguishes claim 25 from Lee. Since there is no identity of elements between claim 25 and Lee, Lee therefore fails to anticipate claim 25.

As explained in the Background of the Invention of the present application, different types of defects have different sources and different impacts on the final device yield. As a result of new planarization processes (such as chemical mechanical planarization or polishing or CMP) and other processes used in the semiconductor industry, different kinds of anomalies are introduced to the wafer surface, such as microscratches, chatter marks, slurry residue, water marks, long scratches (continuous and spiral), pits, rip-out, dishing as well as surface and embedded particles. The cause of these anomalies is explained in more detail on pages 1-3 of the present application.

Different types of defects may call for different remedies. Thus, particles can be removed by post-CMP cleaning and may have no significant impact on the final yield. Unlike particles, some of the CMP-induced defects, such as microscratches and chatter marks, cannot be removed by post-CMP cleaning and it is important to sort them out and minimize their

occurrence since they may impact final yield. For the cleanable defects such as particles, the classified defect counts can be used for process control.

For the reasons above, the capability to classify the anomalies will permit a user to distinguish between microscratches from particles and other point defects and adjust the CMP or other cleaning process in real time in an on-line production process or post-processing as required to improve yield. Lee is not able to accomplish the type of anomaly classification described above.

Lee uses different thresholds when analyzing information (e.g. data) from different layers. Lee uses different optimal thresholds when analyzing data from different layers because different layers can have different image properties, such as reflectance and image texture. Each of these thresholds is then used when comparing test and reference image data to detect defects in the corresponding layer for which the threshold is determined to be optimal.

According to Lee, “Different layers of a given surface are typically of different types of materials, and therefore exhibit different image properties ... ADC system 20 takes advantage of the different image properties of different layers by separately analyzing the image properties of different layers to establish an optimal error threshold for each layer. ADC system 20 then uses these optimum error thresholds when comparing test and reference image data to achieve improved defect detection.” See column 4, lines 9-19 of Lee. Lee uses a confocal optics to take images (called “slices” in Lee, and see column 4, lines 58-66) of the wafer at different Z levels, and establishes an optimum threshold for each of the layers (i.e. Z level). See the Abstract and Column 6, lines 1-12.

Thus, Lee is trying to achieve a goal very different from that of the rejected claims. Lee’s goal is to take images of the wafer at different Z levels (each level corresponding to a layer), and establish an optimum threshold for each of the layers, whereas in the rejected claims, the same information from the sample is analyzed using two different thresholds for classifying the defects detected into different categories.

Hence, in view of the vast differences between the above-noted features of claim 25 on the one hand, and those of Lee on the other outlined above, it is further believed that there is no

reason or motivation for one skilled in the art to modify Lee in order to arrive at the above-described features of claim 25. Claim 25 is thus believed to be allowable.

Claims 25, 26, 28-31 and 37-40 are rejected. For reasons given above, it is believed that these claims are now allowable.

We note with appreciation the Examiner's indication that Claims 27 and 32-36 would be allowable if rewritten in independent form. This has not been done since the claims upon which they depend are also believed to be allowable.

Claims 25-40 are pending in the present application.

#### CONCLUSION

In view of the amendments and remarks contained herein, it is believed that all claims are in condition for allowance and an indication of their allowance is requested. However, if the Examiner is aware of any additional matters that should be discussed, a call to the undersigned attorney at: (415) 318-1162 would be appreciated.

Respectfully submitted,



James S. Hsue  
Reg. No. 29,545

June 23, 2005  
Date